

Rotary lever clamps

hydraulically single- and double-acting, pneumatically double-acting

250-10

Issue: 10/2022



Application example:

Multiple clamping fixture with 24 double-acting rotary lever clamps

Description:

This type of cylinder is especially suited for clamping fixtures with only little space for the installation of clamping elements. Its construction and compact design allows flexible solutions at various installation conditions.

HYDROKOMP offers hydraulic clamps which are single-acting as well double-acting. They are used in clamping fixtures whose oil supply is made through drilled channels.

To swing down the clamp arm, the linear motion is used pro rata which clamps the workpiece. To unclamp, the clamp arm swings back to where the workpiece can be safely taken out.

You can order standard clamp arms from different materials and various lengths as accessories. The cylinder can also be assembled with special and self made clamp arms (see page 5). The clamping force depends on the length of the clamp arm.

Operating conditions:

The clamp arm is coupled with the piston rod. In single-acting cylinders the clamp arm is opened through the reset spring. In double-acting cylinders this is done through the pressure medium. When installing a rotary lever clamp, the flange face should be adapted to the height of the workpiece. With that, the clamping point should be horizontally. Despite the short clamping stroke, workpiece tolerances can be optimally compensated. The rotary lever clamp is suited for any installation positions. For the hydraulic version we recommend hydraulic oils according to DIN 51524 (HL, HLP) as pressure medium.

Safety instructions:

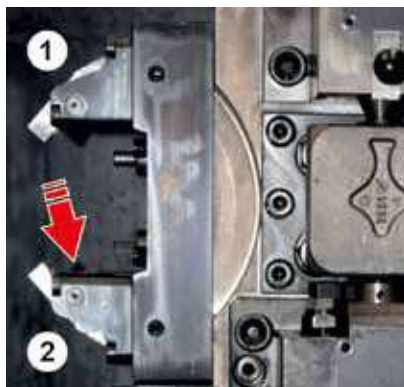
Rotary lever clamps can generate high forces. Workpieces and fixtures must be designed for this. During operation, danger of crushing is given. **Accident prevention regulations** must be observed.

The rotary lever clamps must regularly be checked for contamination and cleaned when necessary.

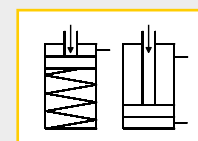
Installation note:

The rotary lever clamp is basically suitable for any mounting position. However, it must be ensured that the chosen installation position does not enable the accumulation of metal shavings in the swing range of the clamp arm during the operation (see picture).

1. suitable installation position
 2. unsuitable installation position,
- metal shavings could be accumulated.



Webcode: 025010



Connections:

- ☒ Drilled channels

Designs:

- ☒ DHSP hydraulic (Operating pressure max. 400 bar)
 - single-acting
 - double-acting

Recommended hydraulic oils according to DIN 51524 (HL, HLP)

- ☒ DHSP pneumatic
 - double-acting

Advantages:

- ☒ Clamping without shear forces
- ☒ Tubeless oil supply
- ☒ Partial retractable housing
- ☒ Individual clamp arms mountable
- ☒ Easy loading and unloading of the fixture
- ☒ Position control optionally available

We also design and manufacture customized variants!



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Hydraulische Komponenten GmbH



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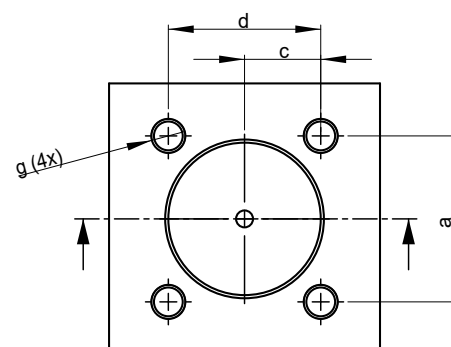
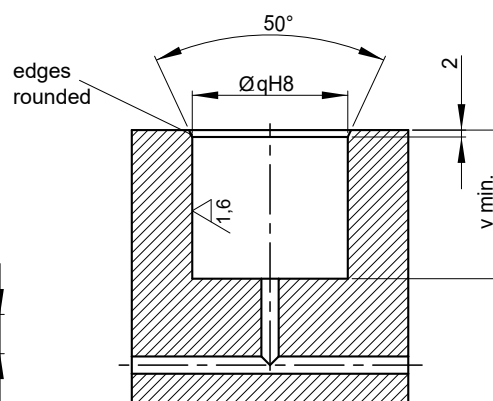
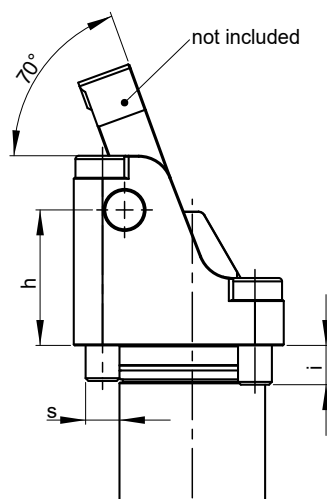
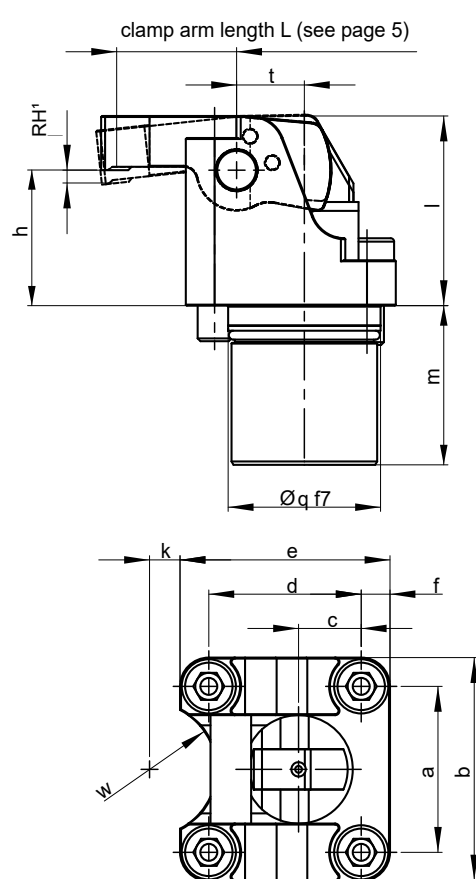
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Clamp arm:

Clamp arms are not included in scope of supply. (see accessories on page 5)
RH' Dimensions for the residual stroke, see table on page 5

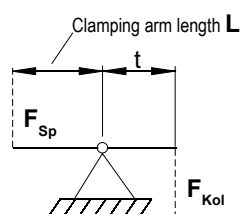
Material:

housing made of steel,
 piston rod tempered steel

Size		12	16	20	25	32	40	50
Piston force at 100 bar	[kN]	1,1	1,9	3	4,7	7,8	12,3	19,3
Piston force at pmax. 400 bar	[kN]	4,4	8	12,4	19,4	32	50	78,2
Volume	[cm³]	0,68	1,61	3,14	6,14	12,9	25,2	49,1
Effective piston surface	[cm²]	1,13	2,01	3,14	4,91	8,04	12,57	19,63
a	[mm]	19,5	25	30	38,5	49	59	74
b	[mm]	27	34	40	52	66	78	98
c	[mm]	8,75	9,5	13,5	14,75	18,5	21,5	25,75
d	[mm]	18,5	23	30	35,5	45	55	68
e	[mm]	26	32	40	49	62	74	92
f	[mm]	3,75	4,5	5	6,75	8,5	9,5	12
g	[mm]	M4x8	M5x10	M6x10	M8x12	M10x15	M12x18	M16x22
h	[mm]	15	20	25	31,25	40	50	62,5
i	[mm]	7,5	10,5	9	11,5	11,5	17,5	22,5
k	[mm]	7,5	10	13,5	11	9	12	14,5
l	[mm]	21	28	35	43,75	56	70	87,5
m	[mm]	23	26	32,5	37	47	55	62,5
q Ø	[mm]	20	24	30	36	45	55	66
s (acc to DIN 6912)	[mm]	M4x10/4x25	M5x16/5x35	M6x16/6x40	M8x20/8x50	M10x25/10x65	M12x30/12x80	M16x40/16x100
t	[mm]	7,5	10	12,5	15,63	20	25	31,25
v	[mm]	23,5	26,5	33	38	48	56	63,5
w Radius	[mm]	10,6	14,2	18,2	18,7	19,7	24,7	31
Weight	[kg]	0,11	0,2	0,405	0,7	1,4	2,46	5,07
Order number:	→ DHSP...	-EHS-012-001	-EHS-016-001	-EHS-020-001	-EHS-025-001	-EHS-032-001	-EHS-040-001	-EHS-050-001
Mounting tool rod seal:		9000-270	9000-271	9000-272	9000-273	9000-274	9000-275	9000-276
Rod seal sparepart:		6012-037	6016-038	6020-065	6025-077	6032-059	6040-023	6050-017

The order number starts with DHSP to be completed. Example: DHSP-EHS-020-001

Effective clamping force F_{Sp} depending from piston force F_{Kol} and clamp arm length L



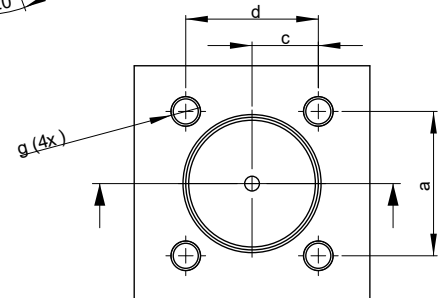
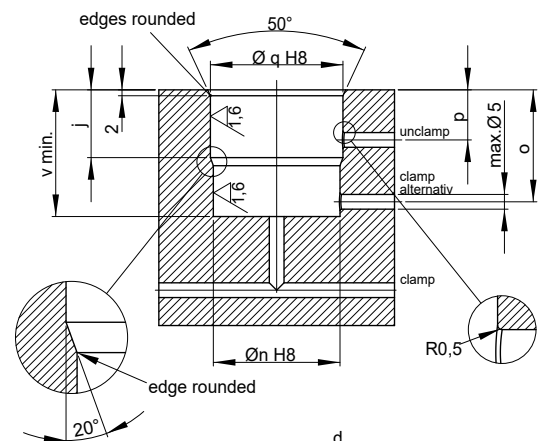
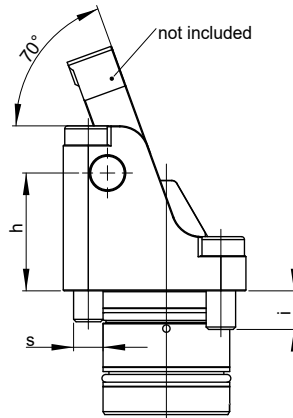
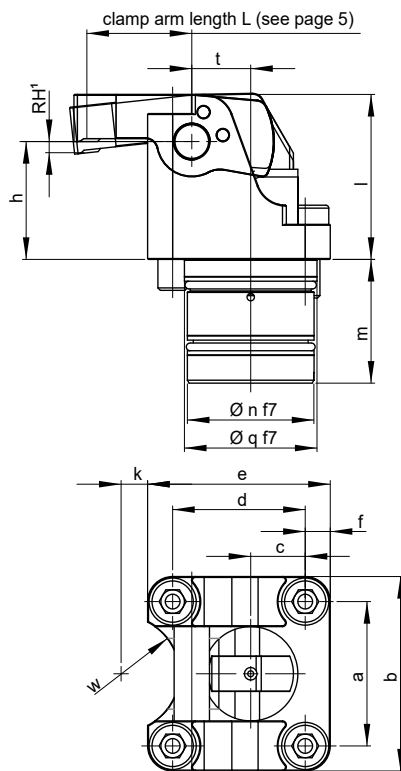
Example:

Rotary lever clamp size 32
 Operating pressure 400 bar
 Piston force F_{Kol} at 400 bar = 32 kN
 Measure t acc. chart = 20 mm
 Clamping arm length L (page 5) = 48 mm
 Resulting effective clamping force F_{Sp} = 13,33 kN

Calculation:

$$\text{r.e. clamp. force } F_{Sp} = \frac{F_{Kol} \times t}{L}$$

$$\text{r.e. clamp. force } F_{Sp} = \frac{32 \text{ kN} \times 20 \text{ mm}}{48 \text{ mm}} = 13,33 \text{ kN}$$



Clamp arm:

Clamp arms are not included in scope of supply. (see accessories on page 5)
RH1 Dimensions for the residual stroke, see table on page 5

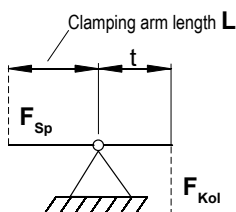
Material:

housing made of steel,
piston rod tempered steel

Size		12	16	20	25	32	40	50
Piston force at 100 bar	[kN]	1,7	2,8	4,5	6,15	10,1	15,9	23,7
Piston force at pmax. 400 bar	[kN]	7	11,3	18	24,6	40,6	63,6	95
Volume	[cm³]	1,06	2,03	4,52	8,82	16,27	31,8	58,2
Effective piston surface	[cm²]	1,77	2,83	4,52	6,15	10,17	15,9	23,75
a	[mm]	19,5	25	30	38,5	49	59	74
b	[mm]	27	34	40	52	66	78	98
c	[mm]	8,75	9,5	13,5	14,75	18,5	21,5	25,75
d	[mm]	18,5	23	30	35,5	45	55	68
e	[mm]	26	32	40	49	62	74	92
f	[mm]	3,75	4,5	5	6,75	8,5	9,5	12
g	[mm]	M4x8	M5x10	M6x10	M8x12	M10x15	M12x18	M16x23
h	[mm]	15	20	25	31,25	40	50	62,5
i	[mm]	7,5	10,5	9	11,5	13	17,5	22,5
j	[mm]	14	17	17	20	23	25	30
k	[mm]	7,5	10	11	11	9	12	14,5
l	[mm]	21	28	35	43,75	56	70	87,5
m	[mm]	21	26	32,5	37	42	47	57,5
n Ø	[mm]	19,4	23	29	35	43	53	64
o	[mm]	23	26	31	33	38	40	53
p	[mm]	11	13	14	15	17	19	24
q Ø	[mm]	20	24	30	36	45	55	66
s (acc to DIN 6912)	[mm]	M4x10/4x25	M5x16/5x35	M6x16/6x40	M8x20/8x50	M10x25/10x65	M12x30/12x80	M16x40/16x100
t	[mm]	7,5	10	12,5	15,63	20	25	31,25
v	[mm]	21,5	26,5	33	38	43	48	58,5
w Radius	[mm]	10,6	14,2	15,7	18,7	19,7	24,7	31
Weight	[kg]	0,12	0,27	0,55	0,86	1,76	2,63	5,33
Order number:	→ DHSP...	-DHS-012-001	-DHS-016-001	-DHS-020-001	-DHS-025-001	-DHS-032-001	-DHS-040-001	-DHS-050-001
Mounting tool rod seal:		9000-270	9000-271	9000-272	9000-273	9000-274	9000-275	9000-276
Rod seal sparepart:		6012-037	6016-038	6020-065	6025-077	6032-059	6040-023	6050-017

The order number starts with DHSP to be completed. Example: DHSP-DHS-040-001

Effective clamping force FSp depending from piston force FKol and clamp arm length L



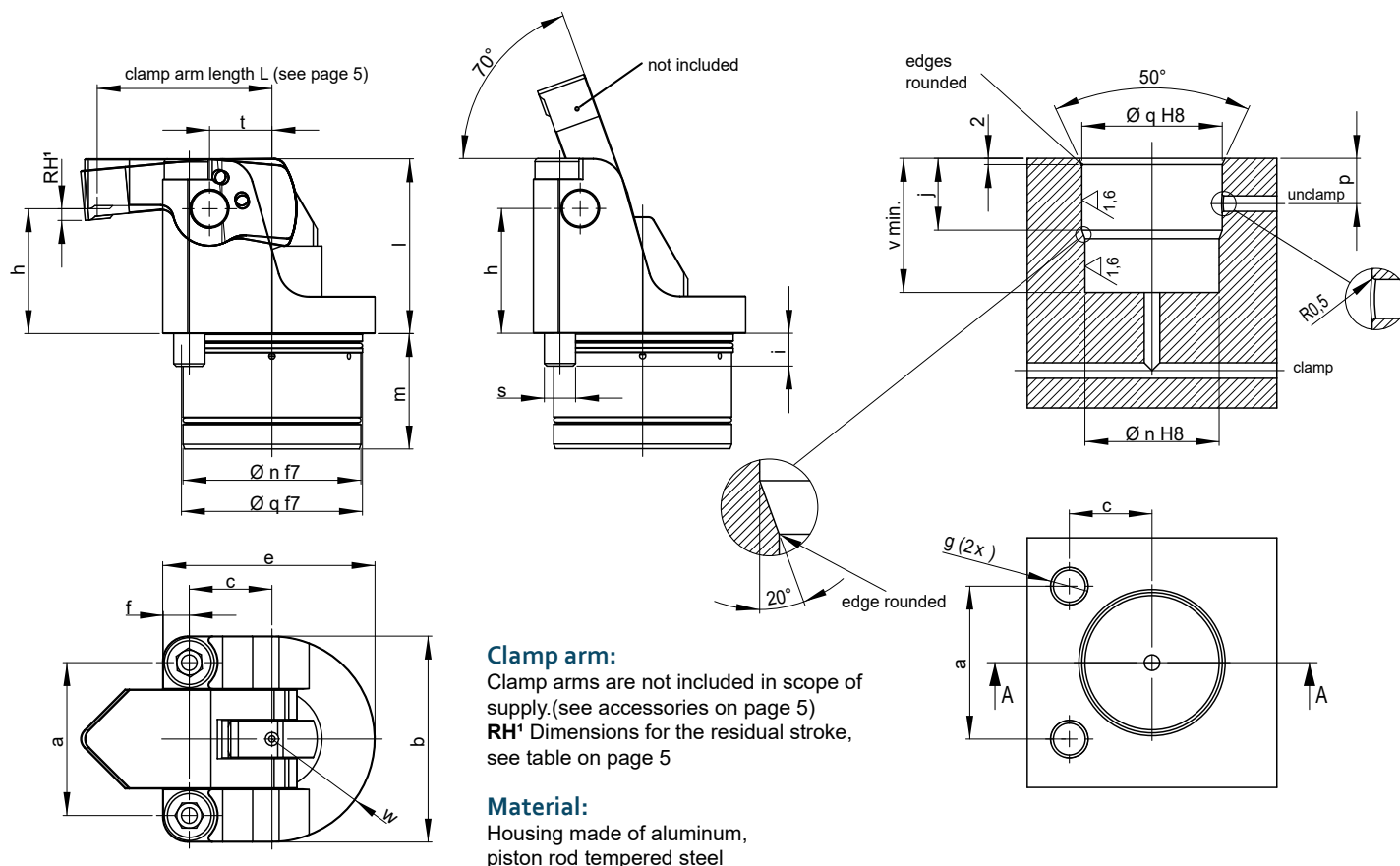
Example:

Rotary lever clamp size 16
Operating pressure 100 bar
Piston force **FKol** at 100 bar = 2,5 kN
Measure **t** acc. chart = 10 mm
Clamping arm length **L** (page 5) = 18 mm
Resulting effective clamping force **FSp** = 1,39 kN

Calculation:

$$\text{r.e. clamp. force } F_{Sp} = \frac{F_{Kol} \times t}{L}$$

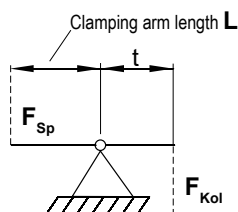
$$\text{r.e. clamp. force } F_{Sp} = \frac{2,5 \text{ kN} \times 10 \text{ mm}}{18 \text{ mm}} = 1,39 \text{ kN}$$



Size		12	16	20	25	32	40	50
Piston force at 6 bar	[kN]	0,14	0,27	0,42	0,68	1,27	1,99	3,01
Effective piston surface	[cm²]	2,27	4,52	7,06	11,34	21,23	33,18	50,26
a	[mm]	19,5	25	30	38,5	49	59	74
b	[mm]	27	34	40	52	66	78	98
c	[mm]	9,75	13,5	16,5	20,75	26,5	33,5	42,25
e	[mm]	27	35	41,5	53,5	68	82	103,25
f	[mm]	3,75	4,5	5	6,75	8,5	9,5	12
g	[mm]	M4x8	M5x11	M6x10	M8x12	M10x16	M12x18	M16x23
h	[mm]	15	20	25	31,25	40	50	62,5
i	[mm]	7	10,5	9	11,5	10,5	17,5	22,5
j	[mm]	12	13	15	19	21	28	35
l	[mm]	21	28	35	43,75	56	70	87,5
m	[mm]	22	24	27,5	32	37	46	55
n Ø	[mm]	20	27	34	43	57	71	89
p	[mm]	9,5	10	11	13	14,5	18,5	22,5
q Ø	[mm]	21	28	35	44	58	72	90
s (acc to DIN 6912)	[mm]	M4x25	M5x35	M6x40	M8x50	M10x65	M12x80	M16x100
t	[mm]	7,5	10	12,5	15,63	20	25	31,25
v	[mm]	22,5	24,5	28	33	38	47	56
w Radius	[mm]	13,5	17	20	26	33	39	49
Weight	[kg]	0,06	0,12	0,22	0,41	0,82	1,5	3
Order number:	→ DHSP...	-DPA-012-001	-DPA-016-001	-DPA-020-001	-DPA-025-001	-DPA-032-001	-DPA-040-001	-DPA-050-001
Mounting tool rod seal:		9000-270	9000-271	9000-272	9000-273	9000-274	9000-275	9000-276
Rod seal sparepart:		6012-014	6015-017	6020-024	6025-024	6032-025	6040-053	6050-046

The order number starts with DHSP to be completed. Example: DHSP-DPA-016-001

Effective clamping force F_{Sp} depending from piston force F_{Kol} and clamp arm length L



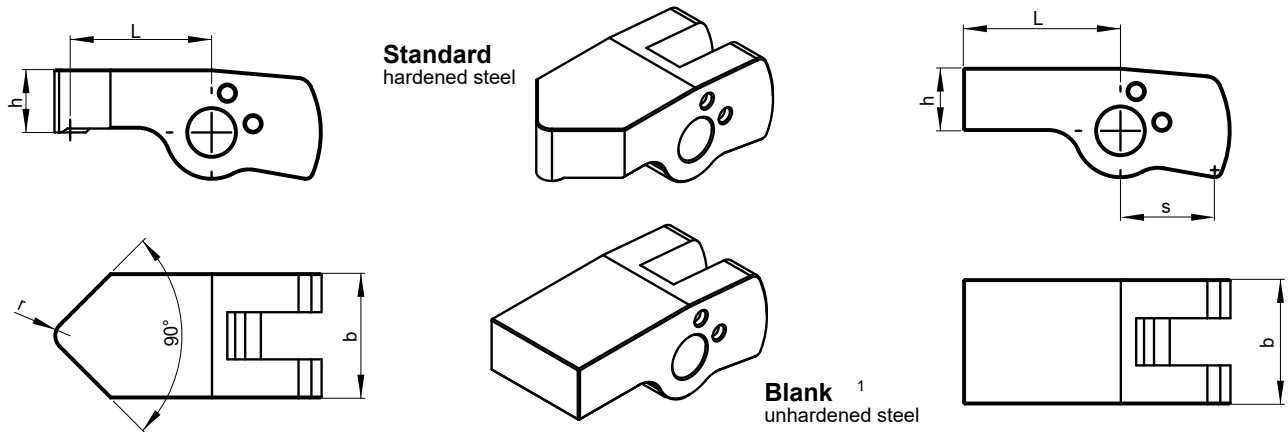
Example:

Rotary lever clamp size 50
Operating pressure 6 bar
Piston force F_{Kol} at 6 bar = 3,010 kN
Measure t acc. chart = 31,25 mm
Clamping arm length L (page 5) = 56 mm
Resulting effective clamping force F_{Sp} = 1,68 kN

Calculation:

$$\text{r.e. clamp. force } F_{Sp} = \frac{F_{Kol} \times t}{L}$$

$$\text{r.e. clamp. force } F_{Sp} = \frac{3,010 \text{ kN} \times 31,25 \text{ mm}}{56 \text{ mm}} = 1,68 \text{ kN}$$

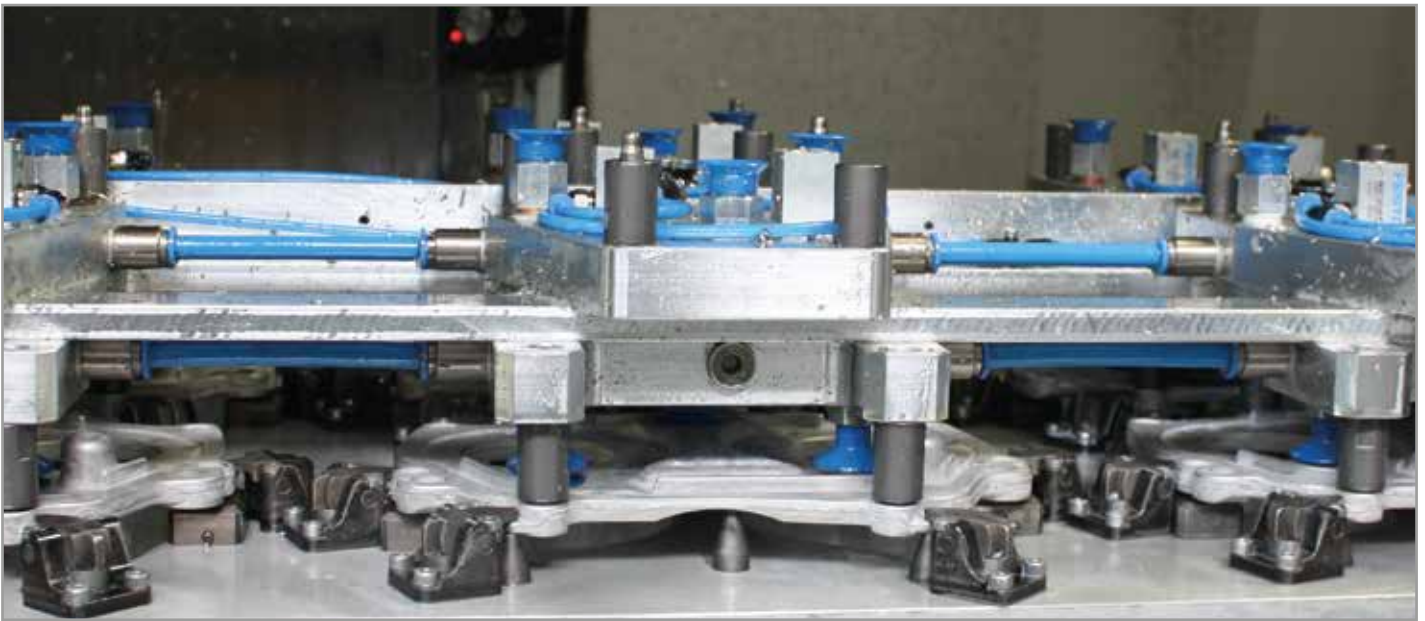


(1) For easier handling, the blanks are made of unhardened steel. To prevent deformation during the operation, the clamp arms must be case-hardened by the customer after completion. (hardening depth: 0,3 +0,2, hardening: HRC 50 +/-2)

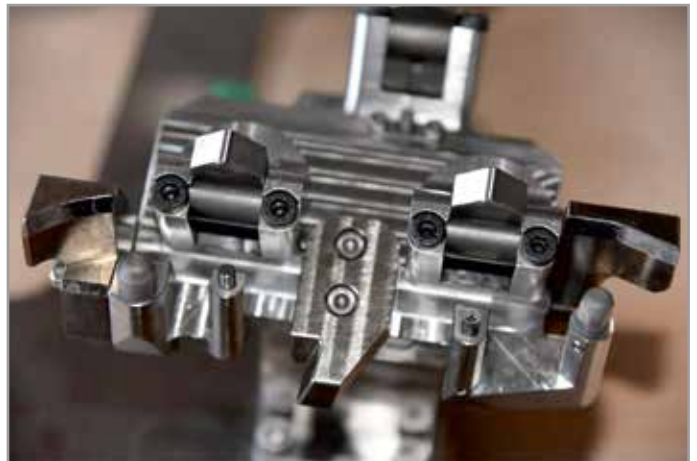
Values are valid for double-acting cylinders

for Size	Type	Clamping force at 6 bar pneumatic	Clamping force at 100 bar hydraulic	Clamping force at 400 bar hydraulic	Residual stroke	b	h	L	r	s	Order No.
12	Standard	0,112 kN	1,416 kN	5,833 kN	0,98 mm	12	6,0	9,0	1,5	–	5012-003
	Standard	0,075 kN	0,944 kN	3,888 kN	1,12 mm	12	6,0	13,5	1,5	–	5012-004
	Standard	0,056 kN	0,708 kN	2,916 kN	1,97 mm	12	6,0	18,0	1,5	–	5012-005
	Standard	0,045 kN	0,566 kN	2,333 kN	2,45 mm	12	6,0	22,5	1,5	–	5012-006
	Blank	–	–	–	1,64 mm	12	6,0	15,0	–	9,00	5012-001
	Blank	–	–	–	2,62 mm	12	6,0	24,0	–	9,00	5012-002
16	Standard	0,225 kN	2,333 kN	9,416 kN	0,78 mm	16	8,0	12,0	2,0	–	5016-006
	Standard	0,150 kN	1,555 kN	6,277 kN	1,16 mm	16	8,0	18,0	2,0	–	5016-007
	Standard	0,112 kN	1,166 kN	4,708 kN	1,6 mm	16	8,0	24,0	2,0	–	5016-008
	Standard	0,090 kN	0,933 kN	3,766 kN	1,94 mm	16	8,0	30,0	2,0	–	5016-009
	Blank	–	–	–	1,29 mm	16	8,0	20,0	–	10,00	5016-004
	Blank	–	–	–	2,07 mm	16	8,0	32,0	–	10,00	5016-005
20	Standard	0,350 kN	3,750 kN	15,000 kN	1,48 mm	20	10,0	15,0	2,5	–	5020-006
	Standard	0,233 kN	2,500 kN	10,000 kN	2,21 mm	20	10,0	22,5	2,5	–	5020-007
	Standard	0,175 kN	1,875 kN	7,500 kN	2,95 mm	20	10,0	30,0	2,5	–	5020-008
	Standard	0,140 kN	1,500 kN	6,000 kN	3,68 mm	20	10,0	37,5	2,5	–	5020-009
	Blank	–	–	–	2,45 mm	20	10,0	25,0	–	12,50	5020-004
	Blank	–	–	–	3,92 mm	20	10,0	40,0	–	12,50	5020-005
25	Standard	0,558 kN	5,058 kN	20,236 kN	1,26 mm	25	12,5	19,0	3,0	–	5025-006
	Standard	0,379 kN	3,432 kN	13,731 kN	1,86 mm	25	12,5	28,0	3,0	–	5025-007
	Standard	0,279 kN	2,529 kN	10,118 kN	2,52 mm	25	12,5	38,0	3,0	–	5025-008
	Standard	0,225 kN	2,045 kN	8,180 kN	3,12 mm	25	12,5	47,0	3,0	–	5025-009
	Blank	–	–	–	2,1 mm	25	12,5	31,0	–	15,63	5025-004
	Blank	–	–	–	3,32 mm	25	12,5	50,0	–	15,63	5025-005
32	Standard	1,058 kN	8,416 kN	33,833 kN	2,56 mm	32	16,0	24,0	4,0	–	5032-006
	Standard	0,705 kN	5,611 kN	22,555 kN	3,85 mm	32	16,0	36,0	4,0	–	5032-007
	Standard	0,529 kN	4,208 kN	16,916 kN	5,13 mm	32	16,0	48,0	4,0	–	5032-008
	Standard	0,423 kN	3,366 kN	13,533 kN	6,4 mm	32	16,0	60,0	4,0	–	5032-009
	Blank	–	–	–	4,28 mm	32	16,0	40,0	–	20,00	5032-004
	Blank	–	–	–	6,84 mm	32	16,0	64,0	–	20,00	5032-005
40	Standard	1,658 kN	13,250 kN	53,000 kN	3,05 mm	40	20,0	30,0	5,0	–	5040-011
	Standard	1,105 kN	8,833 kN	35,333 kN	4,6 mm	40	20,0	45,0	5,0	–	5040-012
	Standard	0,829 kN	6,625 kN	26,500 kN	6,1 mm	40	20,0	60,0	5,0	–	5040-013
	Standard	0,663 kN	5,300 kN	21,200 kN	7,6 mm	40	20,0	75,0	5,0	–	5040-014
	Blank	–	–	–	5,08 mm	40	20,0	50,0	–	25,00	5040-009
	Blank	–	–	–	8,1 mm	40	20,0	80,0	–	25,00	5040-010
50	Standard	2,475 kN	19,490 kN	78,125 kN	3,46 mm	50	25,0	38,0	6,0	–	5050-010
	Standard	1,679 kN	13,225 kN	53,013 kN	5,1 mm	50	25,0	56,0	6,0	–	5050-011
	Standard	1,254 kN	9,874 kN	39,583 kN	6,83 mm	50	25,0	75,0	6,0	–	5050-012
	Standard	0,839 kN	6,612 kN	26,506 kN	10,19 mm	50	25,0	112,0	6,0	–	5050-013
	Blank	–	–	–	5,64 mm	50	25,0	62,0	–	31,25	5050-008
	Blank	–	–	–	10,74 mm	50	25,0	118,0	–	31,25	5050-009

Special sizes and designs are available on request.



Multiple workholding fixture with double-acting rotary lever clamps (piston Ø 12 mm) for two-sided machining, even through the fixture plate. The workholding fixture has six clamp sets, each with six rotary lever clamps. Respectively with three elements, the clamping operation takes place sequentially controlled by a sequence valve. The loading and unloading is done by a robot, which also positions the workpieces. This ensures the collision-free clamping operation.



Pneumatically operated rotary lever clamps in double-acting function with partially cranked special clamp arms.